

Trend Study 13A-10-99

Study site name: Upper Fisher Valley .

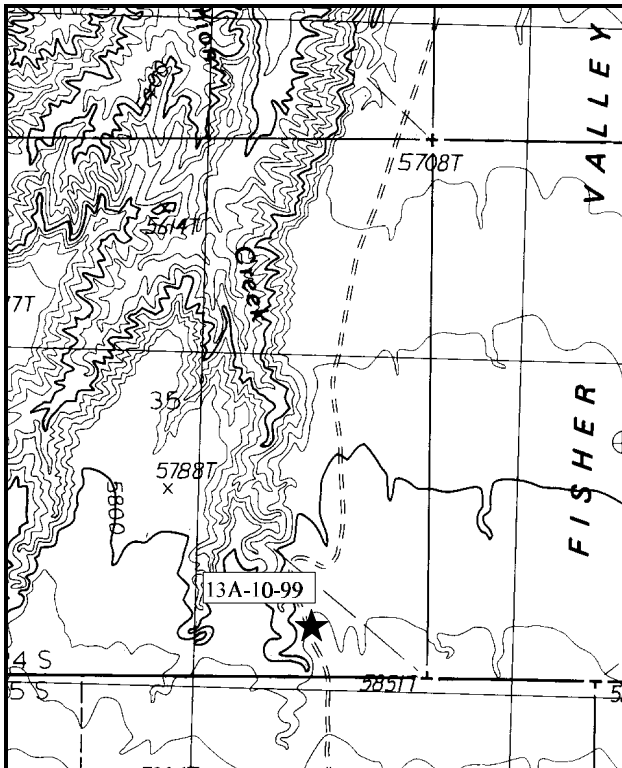
Range type: Big Sagebrush .

Compass bearing: frequency baseline 165°M.

Footmark (first frame placement) 5 feet, footmarks (frequency belts) line 1 (11 & 95ft), line 2 (34ft), line 3 (59ft), line 4 (71ft).

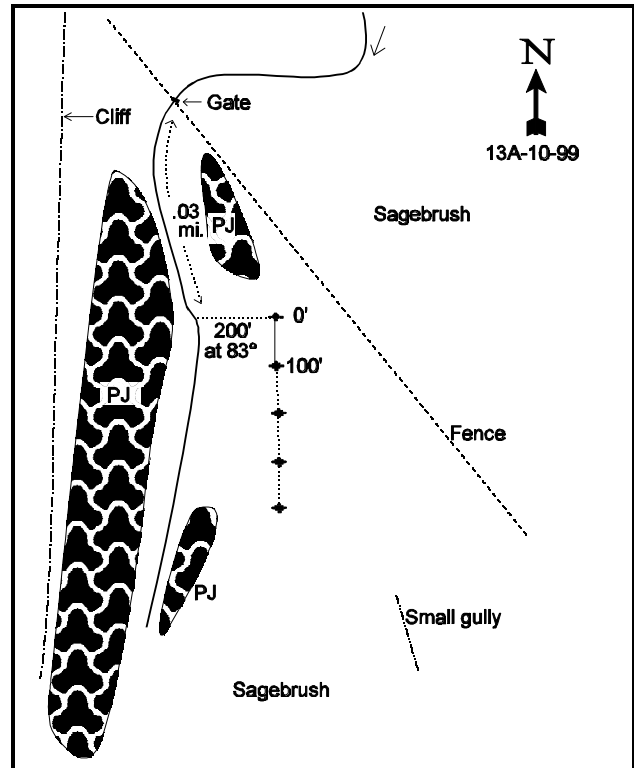
LOCATION DESCRIPTION

Leaving Moab on Route 128, drive northeast 0.1 miles past mile marker 20 (about 5 miles past the Castle Valley turnoff), and turn right onto the Fisher Valley Road. Go 8.7 miles up Onion Creek to a gate at the edge of the valley. Continue 0.25 miles to a dirt road that forks off to the right. Turn here and go 0.85 miles across an annual grass flat to a gate. Continue 1 mile to another fence. Go through the gate and 0.05 miles. The transect is located on the east side of the road about 200 feet out in the sagebrush. Study markers are 1-foot tall green fence posts. The 0-foot baseline stake is tagged #7861.



Map Name: Fisher Valley

Township 24S , Range 24E , Section 35



Diagrammatic Sketch

UTM 4281334.079 N, 653351.968 E

DISCUSSION

Trend Study No. 13A-10 (33-10)

Upper Fisher Valley is thought to be a critical wintering area for deer that migrate north and move off the LaSal Mountains. Pellet group surveys read in 1999 indicated that there were 26 cow days use/acre (64 cdu/ha) and 40 deer days use/acre (99 ddu/ha). Much of the pinyon-juniper woodlands and sagebrush communities in this valley have been historically treated and seeded. The particular area of this study, along the rim of Onion Creek, was two-way chained in 1960 and seeded to crested wheatgrass. Now, 40 years later, there is a moderately dense stand of Wyoming big sagebrush with little desirable understory.

This broad valley is almost level (4-5% slope) with a slight southerly aspect and an elevation of 5,800 feet. The reddish-brown, sandy clay loam soil appears to be moderately deep (effective rooting depth of almost 14 inches) on this site. Soil pH is neutral (6.8) with a low phosphorous content (7.8 ppm) where 10 ppm is considered necessary for normal plant development. It is not rocky, but appears to have a carbonate layer at approximately 8-10 inches below the surface. One of the major limiting factors on the site is the relatively high soil temperatures (over 71°F at 14 inches) which can be very limiting when coupled with long term drought. This warm environment would be especially conducive for the dominance of winter annuals on this site. There are two well-defined natural gullies east of the transect which are still active. Due to the levelness of the terrain, erosion is not a serious problem, although there is some pedestaling of the grasses and some soil movement in the large bare interspaces.

Wyoming big sagebrush is the dominant browse species as it made up 90% of the browse cover and 59% of the total vegetative cover in 1994. That has now changed to 75% of the browse cover and 48% of the total vegetative cover. Broom snakeweed was quite abundant in 1987, then its density fell significantly to 5,720 plants/acre. Currently, it has surpassed the 1987 density and is estimated at 13,220 plants/acre. This weedy increaser is again a dominant part of the understory. Broom snakeweed is not utilized, while the Wyoming big sagebrush is usually moderately hedged. In 1987, the sagebrush population exhibited characteristics of an apparently increasing population with a majority of the individuals being classified as seedlings or young. The vigor of 15% of the plants was affected by a high density of insect galls. The indications are currently showing that the sagebrush trend is down; its density is decreasing; biotic potential has gone from 49% in 1987, to 22% in 1994, to zero in 1999; strip frequency has gone down while that of broom snakeweed has increased; and the percentage of decadent plants classified as dying has increased from 31% to 65%. There are a few 8-10 foot tall junipers established on the flat. The point quarter method established juniper density at only 10 trees/acre with an average diameter of 5.5 inches. They appear to be moving very slowly down-slope from the line of mature pinyon-juniper on the west edge of the study area, along the rim of the canyon.

A fair stand of crested wheatgrass was sampled on the site in 1987. Trend for crested wheatgrass was up in 1994. Since then, its cover has decreased substantially along with nested frequency values. In 1994, it made up 25% of the grass cover, now it only makes up 7% of the grass cover. The dominant grass now is Sandberg bluegrass which makes up 71% of the grass cover. Other perennial grass species sampled on site included galleta, bottlebrush squirreltail, and blue grama. Annual grasses present on the site include cheatgrass and sixweeks fescue. Forbs are an insignificant source of forage on this site. There are several small species present, but none of which are very abundant. Ground cover is poor with percent bare ground almost at 50%. Litter cover is found mainly under the shrubs and it was very low in 1994 and 1999 at 24% and 17% respectively.

1994 TREND ASSESSMENT

Soil trend on this site is stable to slightly improving, but still in very poor condition. The type of cover that will best protect this site from erosion comes from herbaceous species which only make up 35% of the total vegetative cover. There has been some improvement of the perennial grasses (crested wheatgrass and Sandberg bluegrass), with some slight loss of forbs. However, forbs collectively only make up about 10% of the vegetative cover. The trend for the key browse, Wyoming big sagebrush, is up as only 8% of the population exhibited heavy use, while percent decadence is low at only 3%. Vigor is also good for the population. There has been a large increase in the estimated population, but much of this is from the much larger sample size taken in 1994. Yet, the increase is warranted because of the high biotic potential it had in 1987 and high percentage of plants that were classified as young at that time. The weedy increaser, broom snakeweed, has shown a dramatic decline since 1987. The trend for the herbaceous understory is stable to slightly improving with the increases for two of the perennial grasses, but the forbs are still almost nonexistent on this site with the extended drought.

TREND ASSESSMENT

soil - stable to slightly improving, but still very poor condition

browse - up

herbaceous understory - stable to slightly improving

1999 TREND ASSESSMENT

Soil trend on this site is slightly improving, but still in very poor condition. This improved condition is brought about mostly because of the significant increase in cryptogamic cover, from 1% to 11%. The type of cover that will best protect this site from erosion comes from herbaceous species which only make up 35% of the total vegetative cover. The trend for browse is down for Wyoming big sagebrush because of the losses in density, decrease in cover, decrease in strip frequency, biotic potential going from 22% to zero, and percent young has fallen from 12% to only 6%. The weedy increaser, broom snakeweed, has shown a dramatic increase since 1994. The trend for the herbaceous understory is down with nested frequency values for annuals and perennials going down. Forbs are almost nonexistent with the extended drought and total cover less than 1%.

TREND ASSESSMENT

soil - slightly improving, but still very poor condition

browse - down

herbaceous understory - down and very poor

HERBACEOUS TRENDS --

Herd unit 13A, Study no: 10

T y p e	Species	Nested Frequency			Quadrat Frequency			Average Cover %	
		'87	'94	'99	'87	'94	'99	'84	'89
G	Agropyron cristatum	_a 63	_b 105	_a 72	27	42	32	2.48	.65
G	Agropyron intermedium	_a -	_a -	_b 7	-	-	3	-	.04
G	Bouteloua gracilis	_a -	_a -	_b 7	-	-	3	-	.04
G	Bromus tectorum (a)	-	106	104	-	42	43	.88	.38
G	Hilaria jamesii	94	93	79	41	40	37	.96	.80
G	Poa secunda	_a 224	_{ab} 246	_b 256	84	86	86	3.77	6.50
G	Sitanion hystrix	_b 24	_b 6	_a 7	10	2	3	.01	.21

Type	Species	Nested Frequency			Quadrat Frequency			Average Cover %	
		'87	'94	'99	'87	'94	'99	'04	'09
G	<i>Stipa comata</i>	_b 7	_a -	_a -	3	-	-	-	-
G	<i>Vulpia octoflora</i> (a)	-	76	61	-	32	27	.16	.55
Total for Annual Grasses		0	182	165	0	74	70	1.03	0.94
Total for Perennial Grasses		412	450	428	165	170	164	7.23	8.25
Total for Grasses		412	632	593	165	244	234	8.27	9.19
F	<i>Astragalus amphioxys</i>	_b 7	_{ab} 4	_a -	3	2	-	.01	-
F	<i>Calochortus nuttallii</i>	1	-	-	1	-	-	-	-
F	Cruciferae	1	-	-	1	-	-	-	-
F	<i>Draba reptans</i> (a)	-	22	9	-	9	4	.04	.02
F	<i>Erigeron pumilus</i>	6	10	12	3	5	5	.02	.05
F	<i>Gilia</i> spp. (a)	-	5	-	-	2	-	.01	-
F	<i>Leucelene ericoides</i>	-	1	2	-	1	1	.00	.03
F	<i>Lesquerella</i> spp.	-	-	1	-	-	1	-	.00
F	<i>Oenothera albicaulis</i> (a)	1	-	-	1	-	-	-	-
F	<i>Phlox austromontana</i>	_a 21	_{ab} 21	_b 31	11	9	14	.81	.65
F	<i>Ranunculus testiculatus</i> (a)	-	_b 14	_a -	-	6	-	.05	-
F	<i>Sphaeralcea coccinea</i>	_b 62	_a 22	_a 5	25	11	3	.05	.01
F	<i>Tragopogon dubius</i>	4	-	-	2	-	-	-	-
F	Unknown forb-perennial	1	-	-	1	-	-	-	-
Total for Annual Forbs		1	41	9	1	17	4	0.10	0.01
Total for Perennial Forbs		103	58	51	47	28	24	0.90	0.75
Total for Forbs		104	99	60	48	45	28	1.01	0.77

Values with different subscript letters are significantly different at $\alpha = 0.10$

BROWSE TRENDS --

Herd unit 13A, Study no: 10

Type	Species	Strip Frequency		Average Cover %	
		'04	'99	'04	'99
B	<i>Artemisia nova</i>	0	0	-	-
B	<i>Artemisia tridentata</i> <i>wyomingensis</i>	85	78	15.69	13.69
B	<i>Atriplex canescens</i>	0	1	-	-
B	<i>Gutierrezia sarothrae</i>	78	86	.85	3.98
B	<i>Juniperus osteosperma</i>	0	1	.88	.66
B	<i>Opuntia</i> spp	0	0	-	-
B	<i>Pinus edulis</i>	0	0	.00	-
Total for Browse		163	166	17.43	18.34

CANOPY COVER --

Herd unit 13A, Study no: 10

Species	Percent Cover '99
Juniperus osteosperma	.40

BASIC COVER --

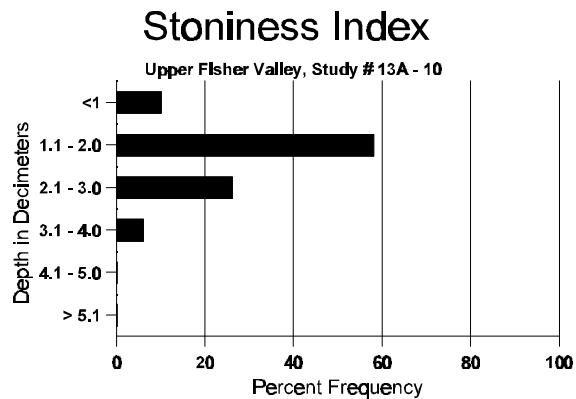
Herd unit 13A, Study no: 10

Cover Type	Nested Frequency		Average Cover %		
	'84	'99	'87	'94	'99
Vegetation	317	309	8.00	23.64	25.24
Rock	2	-	0	.00	0
Pavement	3	3	0	.00	.00
Litter	391	358	32.25	24.45	17.47
Cryptogams	148	221	1.00	1.28	10.75
Bare Ground	366	341	58.75	57.47	48.54

SOIL ANALYSIS DATA --

Herd Unit 13A, Study # 10, Study Name: Upper Fisher Valley

Effective rooting depth (cm)	Temp °F (depth)	pH	%sand	%silt	%clay	%OM	PPM P	PPM K	dS/m
13.9	71.2 (15.3)	6.8	58.9	15.8	25.3	1.6	7.8	73.6	0.4



PELLET GROUP DATA --

Herd unit 13A, Study no: 10

Type	Quadrat Frequency		Pellet Transect Days Use/Acre (ha)
	'84	'99	
Rabbit	68	30	N/A
Deer	53	28	40 (99)
Cattle	1	11	26 (64)

BROWSE CHARACTERISTICS --

Herd unit 13A, Study no: 10

A G R E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4				
Artemisia nova																		
M	87	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0	5	11	0
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
		'87			00%			00%			00%							
		'94			00%			00%			00%							
		'99			00%			00%			00%							
Total Plants/Acre (excluding Dead & Seedlings)												'87	0	Dec:	-			
												'94	0		-			
												'99	0		-			
Artemisia tridentata wyomingensis																		
S	87	46	1	-	-	-	-	-	-	-	46	1	-	-	3133			47
	94	67	-	-	1	-	-	-	-	-	61	-	-	7	1360			68
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
Y	87	38	9	-	-	-	-	1	-	-	34	13	1	-	3200			48
	94	36	-	-	-	-	-	-	-	-	35	1	-	-	720			36
	99	10	4	-	-	-	-	-	-	-	14	-	-	-	280			14
M	87	16	24	1	-	-	-	-	-	-	35	5	1	-	2733	21	25	41
	94	222	19	-	-	-	-	-	5	-	215	8	19	4	4920	20	30	246
	99	104	107	10	-	-	-	-	-	-	221	-	-	-	4420	22	34	221
D	87	1	5	-	-	-	-	-	-	-	5	1	-	-	400			6
	94	26	3	-	-	-	-	-	-	-	18	-	2	9	580			29
	99	7	8	2	-	-	-	-	-	-	6	-	-	11	340			17
X	87	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	40			2
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	40			2
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
		'87			40%			01%			- 2%							
		'94			07%			00%			-19%							
		'99			47%			05%			04%							
Total Plants/Acre (excluding Dead & Seedlings)												'87	6333	Dec:	6%			
												'94	6220		9%			
												'99	5040		7%			
Atriplex canescens																		
M	87	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0	43	66	0
	99	-	5	-	-	-	-	-	-	-	5	-	-	-	100	-	-	5
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
		'87			00%			00%			00%							
		'94			00%			00%			00%							
		'99			100%			00%			00%							
Total Plants/Acre (excluding Dead & Seedlings)												'87	0	Dec:	-			
												'94	0		-			
												'99	100		-			

A G E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4				
Gutierrezia sarothrae																		
S	87	39	-	-	-	-	-	-	-	-	39	-	-	-	2600		39	
	94	20	-	-	-	-	-	1	-	-	21	-	-	-	420		21	
	99	3	-	-	-	-	-	-	-	-	3	-	-	-	60		3	
Y	87	76	1	2	-	-	-	-	-	-	79	-	-	-	5266		79	
	94	42	-	-	7	-	-	-	-	-	49	-	-	-	980		49	
	99	194	-	-	-	-	-	-	-	-	194	-	-	-	3880		194	
M	87	111	-	-	-	-	-	1	-	-	111	-	1	-	7466	11	9	
	94	228	1	-	6	-	-	-	-	-	234	-	-	1	4700	7	7	
	99	451	-	-	1	-	-	-	-	-	452	-	-	-	9040	10	10	
D	87	7	-	-	-	-	-	-	-	-	5	-	-	2	466		7	
	94	2	-	-	-	-	-	-	-	-	1	-	-	1	40		2	
	99	15	-	-	-	-	-	-	-	-	6	-	-	9	300		15	
X	87	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	20		1	
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	400		20	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'87		.50%			01%			02%			-57%							
'94		.34%			00%			.69%			+57%							
'99		00%			00%			01%										
Total Plants/Acre (excluding Dead & Seedlings)												'87	13198	Dec:	4%			
												'94	5720		1%			
												'99	13220		2%			
Juniperus osteosperma																		
S	87	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	99	1	-	-	-	-	-	-	-	-	1	-	-	-	20		1	
M	87	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	
	99	1	-	-	-	-	-	-	-	-	1	-	-	-	20	-	-	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'87		00%			00%			00%										
'94		00%			00%			00%										
'99		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'87	0	Dec:	-			
												'94	0		-			
												'99	20		-			
Opuntia spp.																		
M	87	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0	6	16	
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	0	9	12	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'87		00%			00%			00%										
'94		00%			00%			00%										
'99		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'87	0	Dec:	-			
												'94	0		-			
												'99	0		-			

A G E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.	Total
		1	2	3	4	5	6	7	8	9	1	2	3	4			
Pinus edulis																	
S	'87	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	'94	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	'99	1	-	-	-	-	-	-	-	-	1	-	-	-	20		1
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>						
		'87			00%			00%			00%						
		'94			00%			00%			00%						
		'99			00%			00%			00%						
Total Plants/Acre (excluding Dead & Seedlings)												'87	0	Dec:	-		
												'94	0		-		
												'99	0		-		